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APS-U

User Manual

Revision 1.06

APS-U User Manual

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1 Introduction

1.1 User Notice

This section provides information regarding Warranty and Customer Service with Support. All specifications are typical and subject to change without notice. ALTUS Positioning Systems reserves the right for improvements and changes to this document, products and services without notice or obligation.

1.2 Warranty

ALTUS provides a 2-year warranty for the APS-U receiver, free from defects in materials and workmanship, from date of sale on the invoice of the original buyer. A 90-day warranty is provided for the cables and other accessories. Firmware upgrades are free for life. Software support is free for 1-year from date of purchase.

The warranty does not cover:

- Defects due to accidents, abuse, misuse, negligence, abnormal use or any other non-recommended use
- Defects due to environmental conditions that do not conform to APS-U specifications
- Defects due to improper installation or operating procedures
- Defects due to modifications, alterations, or changes not made in accordance with the APS-U User Manual and other technical documentation or directly authorized by ALTUS
- Normal wear and tear use
- Shipping damage
- 3rd-party software included with the product, other than the warranty of the original manufacturer to the extent the manufacturer permits

Warranty is void if the APS-U has been tampered with or opened

1.3 Customer Service and Support

Contact your ALTUS dealer for first-line support. For further information, please see the Altus support website for documentation and firmware upgrades, or contact ALTUS Technical Support:

Email:	support@altus-ps.com
Website:	www.altus-ps.com/support
Mail:	ALTUS Positioning Systems 20725 Western Avenue, Suite 100 Torrance, CA 90501 (310) 541-8139 office (310) 541-8257 fax

2 APS-U Overview

The APS-U provides multi-frequency GNSS capability together with GNSS Heading, L-Band positioning from Veripos, and wireless communications within a rugged MIL-STD-81 0 housing for the broadest range of applications.

For maximum flexibility, the design is scalable from a single GNSS receiver to full options with Heading, wireless links and L-Band capability.

The APS-U has an additional processor for on-board configuration and custom applications separate from the GNSS engine.

The rear panel has an extensive suite of interfaces for data output, timing, event marks, and a second antenna port for GNSS Heading. Integrated wireless options include Bluetooth for easy configuration, plus optional GSM cellular modem and UHF radio modem for transmission or reception of RTK corrections.

2.1 APS-U GNSS Features

- 272 Channel AsteRx2eH, with L1/L2/L2C GPS, GLONASS and SBAS.
- Bluetooth® (class 1)
- 2GB SD Card for internal data logging (not removable).

2.1.1 GNSS Navigation Accuracy

Navigation Performance	Horizontal (m)	Vertical (m)
Standalone (Autonomous)	1.3	1.9
SBAS (WAAS, EGNOS, MSAS)	0.6	0.8
DGPS (RTCM1,3 / 9,3)	0.5	0.9
Veripos APEX	0.1	0.2
RTK*	0.01 + 1 ppm	0.02 + 1 ppm

2.1.2 GNSS Heading Accuracy

Separation	Heading	Pitch or Roll
1 meter	0.3°	0.6°
10 meter	0.03°	0.06°

2.2 Shipping Contents

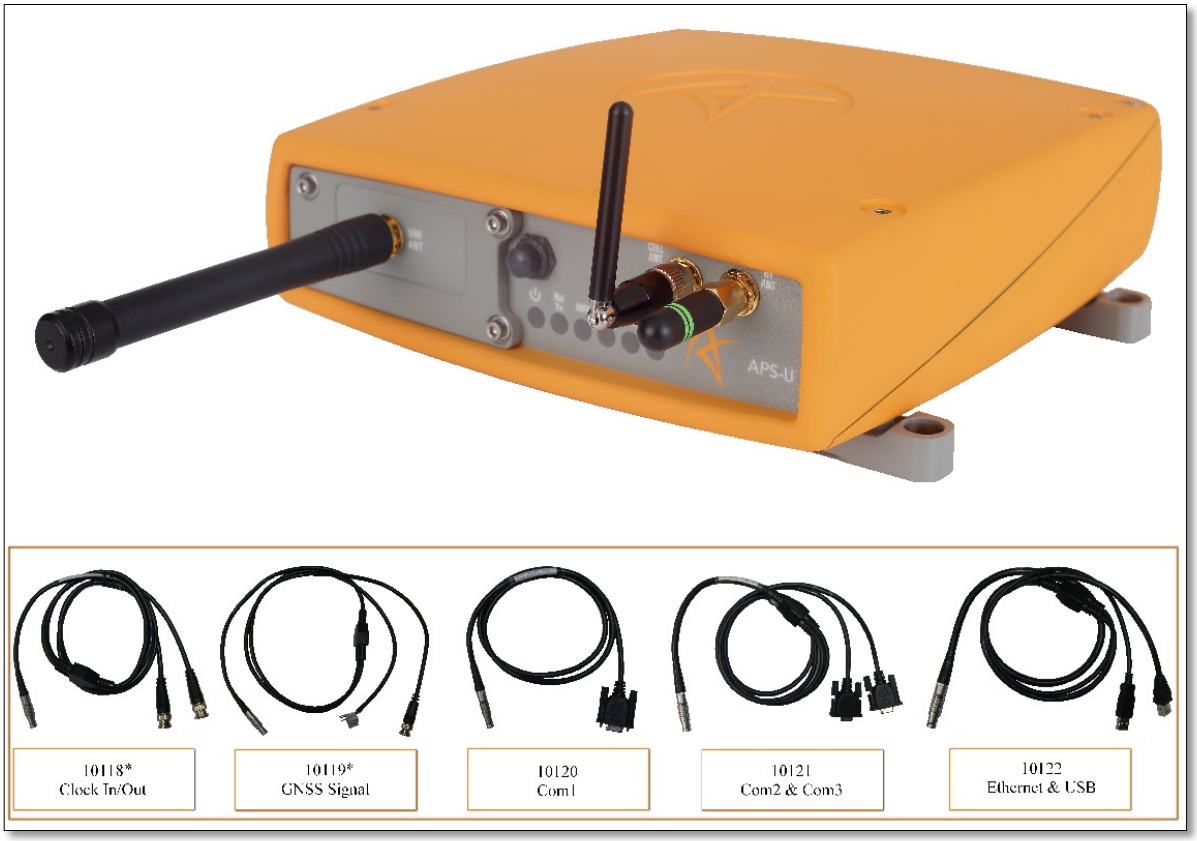

Figure 1: Shipping Contents (*Optional Accessory)

One APS-U system includes the following items:

Items	Purpose
Bluetooth Antenna	Bluetooth communication
Serial Cable	Dual RS232/Serial connectivity (Com2/Com3)
Power Cable	9-30 VDC external power input
USB & Ethernet Cables	Configuration via USB and Ethernet
CD	Software Programs and Manuals

Preinstalled Items	Purpose
SD Card	2GB SD card for internal data logging, non-removable

2.3 APS-U Design

2.3.1 Front Panel

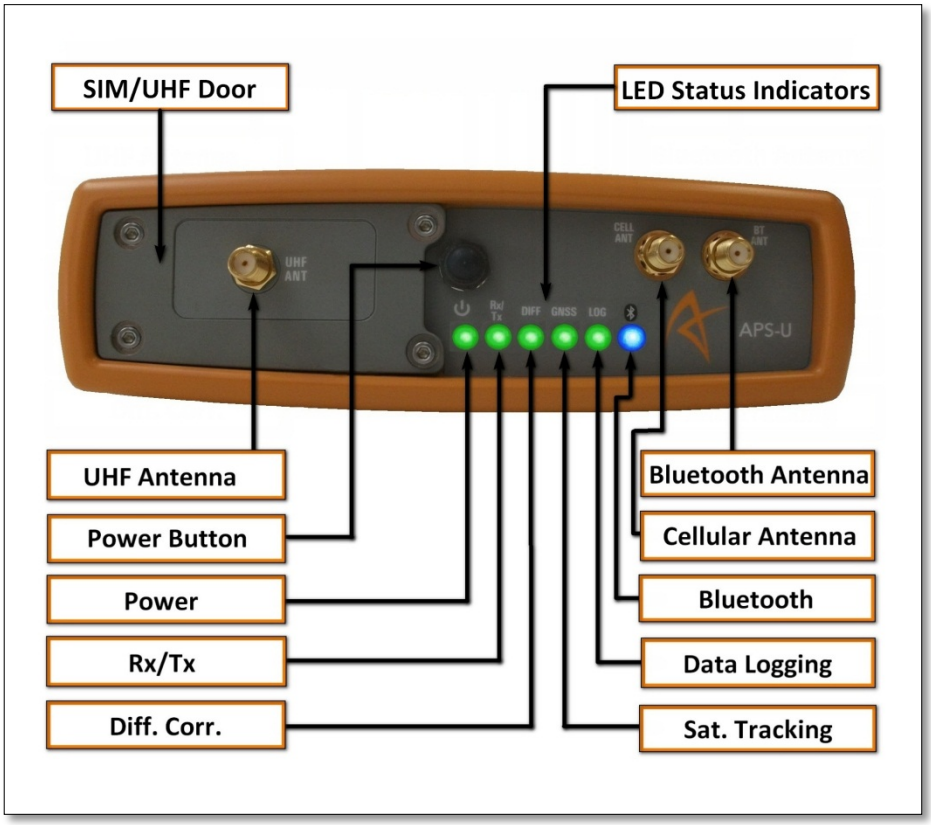

Figure 2: Front Panel

2.3.2 Rear Panel

There are 7 ports on the APS-U. The rear of the APS-U has two TNC connectors for GNSS antennas; one for the main antenna and one for the auxiliary antenna for heading applications

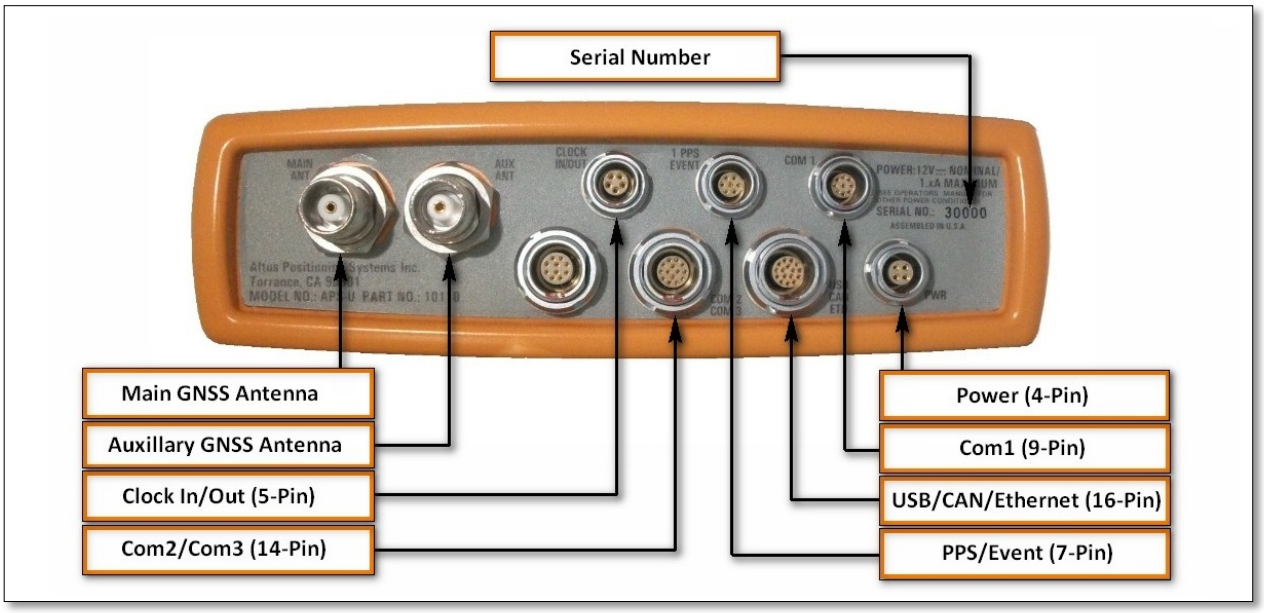

Figure 3: Rear Panel

2.3.3 Mounting Brackets

Figure 4: Mounting Brackets

3 Using the APS-U

For ease of use the following items are noted for the user:

- Review this APS-U User Manual thoroughly before first use of the APS-U.
- All antennas must be connected before power is turned on.
- Note the wait time for the boot-up sequence before use.
- Store preferred GNSS settings to the boot memory of the receiver
- Ensure the GNSS receiver has been authorized for Veripos APEX corrections, if applicable.

3.1 APS-U Front Panel

The APS-U has LEDs to indicate status of the GNSS receiver, as well as incoming differential corrections via external device.

Figure 5: LED's

3.1.1 LED Description

LED	ICON	Status
Green		On: Receiver is Powered on Off: Receiver is Powered off
Green		On (Flashing): Rx/Tx Data Off: No Data
Green		On (Flashing): Rx RTK Corrections On (Solid): Tx RTK Corrections Off: No RTK Corrections
Green		Fast & Continuous (10 times per second) 0 Satellites Blinks 1 time, then pauses: 1,2 Satellites Blinks 2 times, then pauses: 3,4 Satellites Blinks 3 times, then pauses: 5,6 Satellites Blinks 4 times, then pauses: 7,8 Satellites Blinks 5 times, then pauses: 9+ Satellites
Green		On: Internal SD Card Data Logging enabled Off: Internal SD Card Data Logging not enabled
Blue		On: Established device communication Off: Idle for device bonding

3.1.2 Power Button

The power button is located on the front panel, is used for turning the APS-U ON or OFF.

Note: At first power on there is a 30 s boot time for the internal processor to start properly.

Function	Procedure
ON	Press and release, GREEN LED turns ON
OFF	Press and release, GREEN LED turns OFF
Hard power OFF	Press and hold for 4 seconds and release or until power LED turns OFF

3.2 APS-U Rear panel

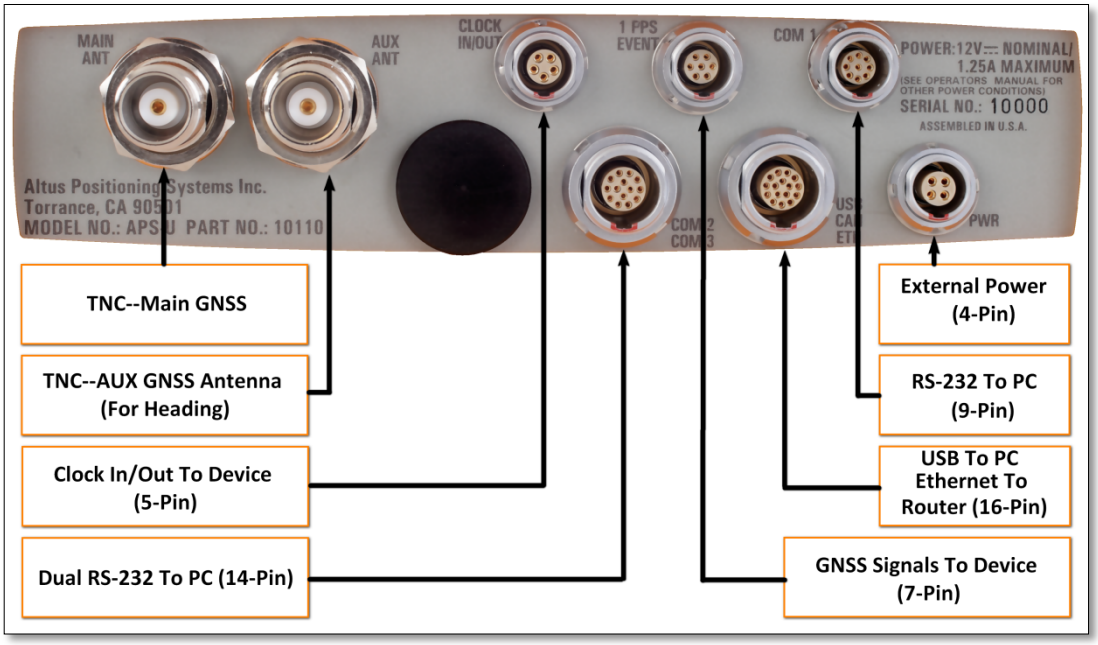

Figure 6: Rear Panel

LEMO	Description	Purpose
5-pin	Clock In/Out	Clock In/Out to Device
14-pin	Com2/Com3	Dual RS-232 to PC Com2 RS-232 to PC (Connection to Internal Processor) Com3 RS-232 PC (Connection to GNSS Receiver)
7-pin	PPS/Event	PPS Output & Event input
16-pin	USB/ETH	USB to PC (Connection to Internal Processor). Ethernet to router or PC (Connection to System or GNSS).
9-pin	Com1	RS-232 to PC (Communication to Internal Processor)
4-pin	Power	DC Power Input

3.3 Clock In/Out

This port uses cable assembly p/n 10118 which has a 5-Pin Lemo plug to the APS-U that splits into two BNC connectors for Clock In & Out:

- Clock Out: This outputs a 10MHz signal from GNSS Receiver.
- Clock In: This inputs a 10MHz signal to GNSS Receiver.

Pin #	Description	Connector
1	Ground	BNC Shell
2	Clock Out	BNC Center Conductor
3	Ground	Not Connected
4	Clock In	BNC Shell
5	Ground	BNC Center Conductor

3.4 PPS & Event In

This port uses cable assembly p/n 10119 which has a 7-Pin Lemo plug to the APS-U rear panel that into a BNC connector for 1 Pulse Per Second (PPS) out, and wire connectors for Event A & B markers.

Pin #	Description	Connector
1	Not Connected	Not Connected
2	Event A	Tag with 'Event A'
3	Event B	Tag with 'Event B'
4	Not Connected	Tag with 'GND'
5	Not Connected	Not Connected
6	Pulse Per Second (PPS) Out	BNC Center Conductor
7	Not Connected	BNC Shell
*	Connect Pins 4 & 7 Together to Ground	Not Connected

3.5 COM1

This port uses cable assembly p/n 10120 which has 9-Pin Lemo plug to the APS-U rear panel and a DB9 connector for RS-232 communication with COM1 of the system; direct communication with the internal processor.

Pin #	Description	Connector
1	CTS	8 (DB9-Female)
2	Not Connected	Not Connected
3	Not Connected	Not Connected
4	Ground	Not Connected
5	Ground	Not Connected
6	RX	3 (DB9 Female)
7	TX	2 (DB9 Female)
8	RTS	7 (DB9 Female)
9	Ground	(DB9 Female)

3.6 COM2 & COM3

This port uses cable assembly p/n 10121, which has a Lemo 14-Pin plug that splits into 2 DB9 connectors for RS-232 communication with Com2 and Com3 of the system.

- Com2: Direct communication with the internal processor.
- Com3: Direct communication with the GNSS Receiver.

Pin #	Description	Connector
1	VBUS	Not Connected
2	USB_DP	Not Connected
3	USB_DN	Not Connected
4	Ground	Not Connected
5	Tx3	2 (DB9 Female)
6	Rx3	3 (DB9 Female)
14	Ground	5 (DB9 Female)
7	CTS2	8 (DB9 Female)
8	Rx2	3 (DB9 Female)
9	RTS2	7 (DB9 Female)
10	Tx2	2 (DB9 Female)
11	Ground	5 (DB9 Female)
12	Ground	Not Connected

3.7 Ethernet & USB

The port uses cable assembly p/n 10122, which has a 16-pin Lemo plug that splits into a USB (Type A) port communicates directly to the internal processor, and an Ethernet RJ45. The Ethernet port can be connected for communication to a PC or Ethernet router. This is internally connected to an Ethernet hub to communicate with the internal processor or the GNSS receiver.

Pin #	Description	Connector
1	Ground	Not Connected
2	LRXP	3 (Ethernet Plug)
3	LRXN	6 (Ethernet Plug)
4	LTXP	1 (Ethernet Plug)
5	LTXN	2 (Ethernet Plug)
7	USB_DM	3 (USB Type A Plug)
6	USB_DP	2 (USB Type A Plug)
8	USB_VBUS	1 (USB Type A Plug)
12	Ground	4 (USB Type A Plug)
9	CAN_TX0	Not Connected
10	CAN_RX0	Not Connected
11	NC	Not Connected
13	Ground	Not Connected
14	Ground	Not Connected
15	Ground	Not Connected
16	Ground	Not Connected

3.8 DC Power Input

The external power input is via the 4-pin LEMO connector.

The specifications are:

- External Power: 9 VDC to 30 VDC
- Current: 0.89 A @ 12 VDC Nominal

Wire Color	Function
RED	Power (+)
BLACK	Ground (-)
GREEN	Not Used
WHITE	Not Used

3.9 Internal SD Card

The APS-U comes pre-installed with a 2GB SD Card for internal data logging. The SD card is not user removable.

When using with APS-U for internal data logging, data is stored on the SD card in SBF or text format, and may be retrieved after the logging session is complete. Files are accessed via Ethernet connection (default: 192.168.5.126/log-dir/mmcp1) and can be downloaded.

4 Factory GNSS Receiver Settings

The instructions below should be used to recover APS-U factory default settings.

4.1 Recover Factory Settings

4.1.1 Hold the power button down for 4 seconds.

4.1.2 Factory Settings will take effect upon reboot.

5 Ethernet Settings

Connect the Ethernet cable from the APS-U to the PC. The PC must have RxTools installed to provide the RxControl program for GNSS configuration.

5.1 Changing IP Address on Processor Using the Web Interface

5.1.1 Using a Firefox/Chrome Web Browser, type in the current IP address.

5.1.2 Click on 'Settings.'

5.1.3 Scroll Down to APS-U IP Settings.

5.1.4 Select the Static Icon.

5.1.5 Type in the appropriate information.

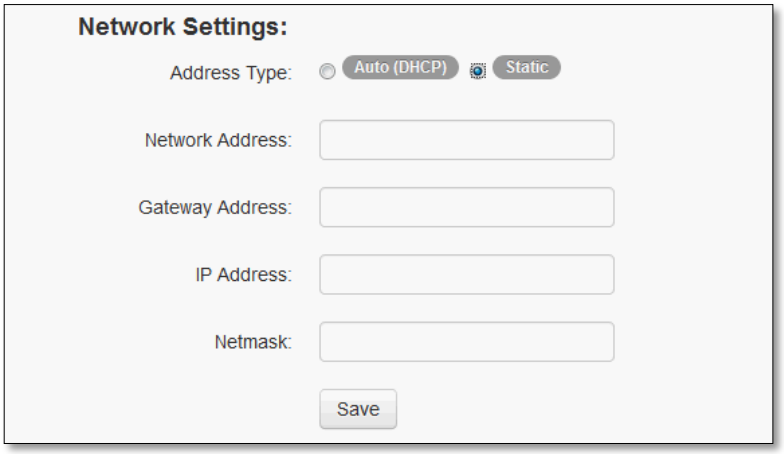

Figure 7: APS-U IP Settings (Using Web Interface)

5.1.6 Select Save.

5.1.7 Test the new settings by entering the new IP address into a Web Browser Window.

5.2 Changing IP Address on GNSS

5.2.1 Connect COM3 of the APS-U to PC with cable 10121 and start RxControl

5.2.2 Select Configuration →Communication→Network Settings

5.2.3 Change default IP address to desired new IP address

5.2.4 Save the configuration to Boot with File→Copy Configuration

5.2.5 Changes take effect after the system is rebooted

6 APS-U Configuration

Use a standard Web Browser (Firefox, Chrome, etc…) to access the APS-U's Web Interface. The user can then configure the APS-U per module using this interface. Type the IP address of the device (default: 192.168.2.126) into the browser to access to the system. This IP address is the default address used at the factory

6.1 APS-U Status

6.1.1 Enter the IP address of the system. This will bring the user to the main APS-U configuration screen.

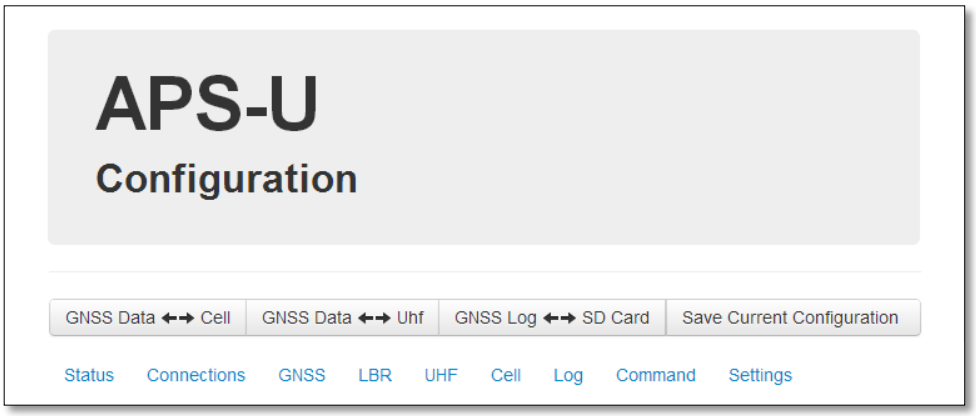

Figure 8: APS-U Configuration Main Screen

6.1.2 Click on 'Status' to view update options of the APS-U. Update options are:

- Two Seconds
- Five Seconds
- Ten Seconds
- One Minute

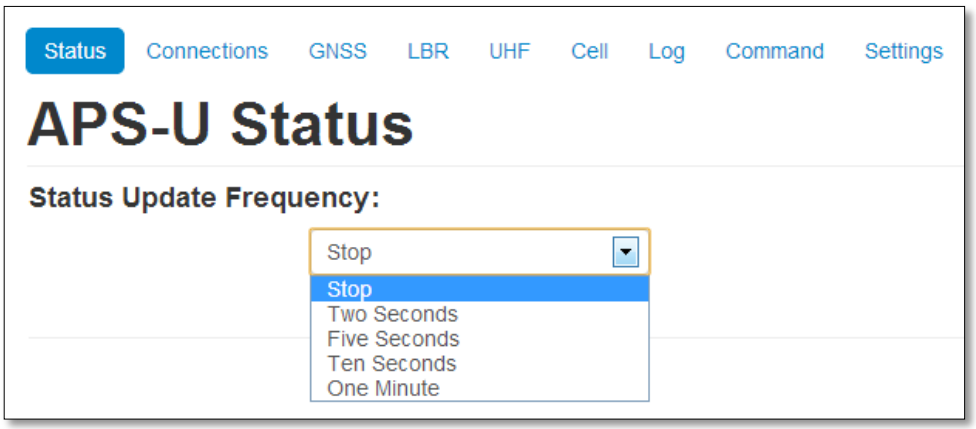

Figure 9: APS-U Status Update Rates

Figure 10: APS-U GNSS Status

6.2 APS-U Connections

Click on 'Connections' to view/change the APS-U's internal or external connections.

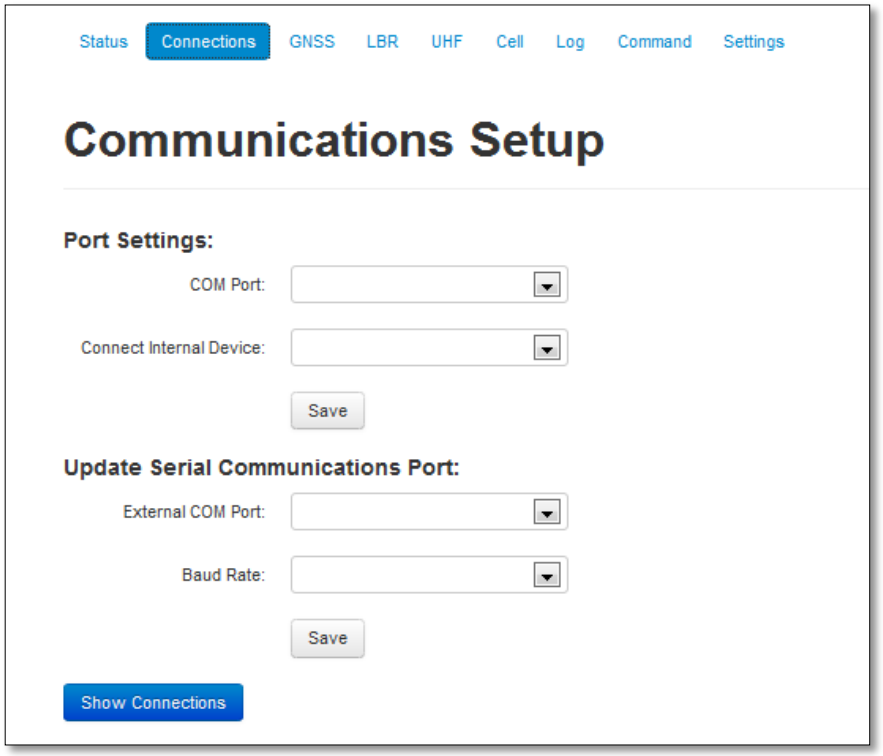

Figure 11: APS-U Communications Main Screen

6.2.1 Port Settings. Options allow for a selected COM Port to be connected to a selected Internal Device.

For example, selection of USB and GNSS Log will connect the USB port directly to the GNSS receiver.

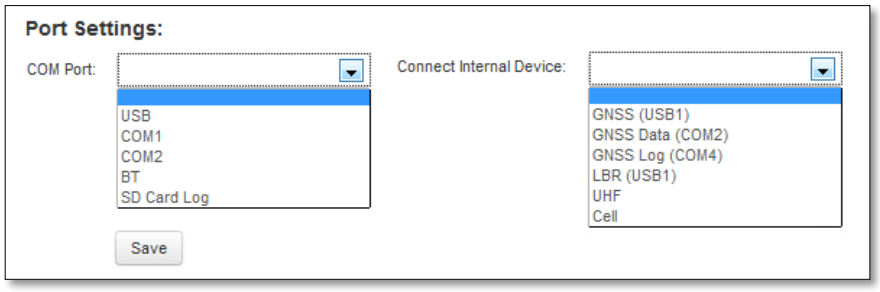

Figure 12: Ports/Internal Device Selections

6.2.2 Update Serial Communications Port. Options allow for a range of baud rates to be assigned to an External COM Port. For example, selecting COM 1 and 9600 would assign COM 1 communication to be at 9600 baud.

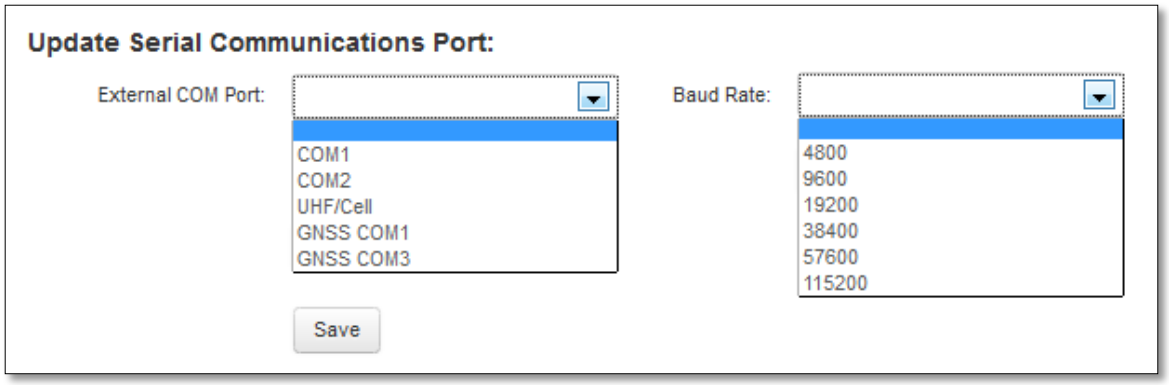

Figure 13: External COM Port Baud Rate Options

6.2.3 Show Connections. This allows the user to see the current connections present in the APS-U.

Two connections are permanent:

- GNSS COM1 ←→ LBR COM1
- GNSS COM3 ←→ COM3

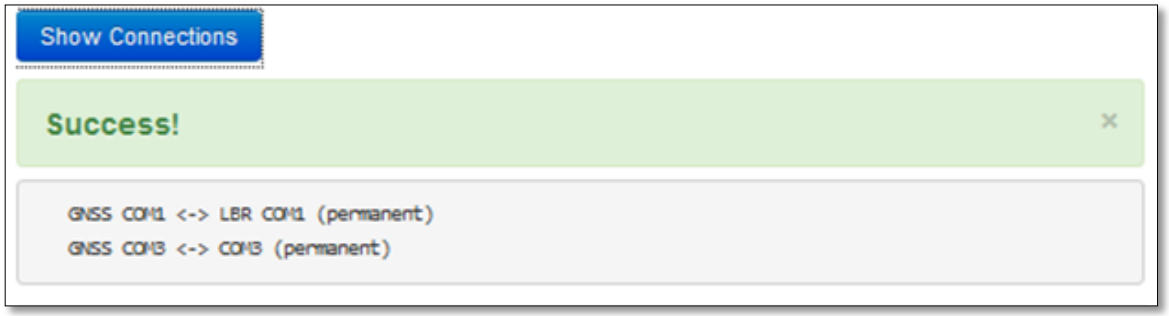

Figure 14: APS-U Connection Display

6.3 GNSS Receiver Configuration

Click on 'GNSS' to view/change some GNSS settings.

- For a full complement of GNSS receiver settings, use either the GNSS Web Interface (see 6.3.2) or RxTools (connected on COM3 of the APS-U).

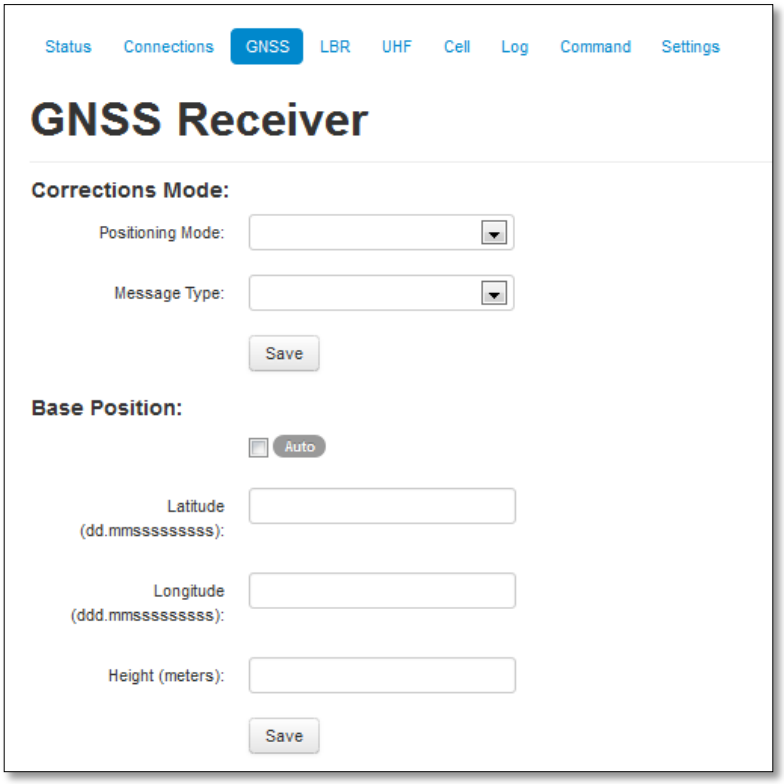

Figure 15: GNSS Receiver Main Screen

6.3.1 Corrections Mode. The user can select the Positioning Mode and the desired Message Type (if applicable).

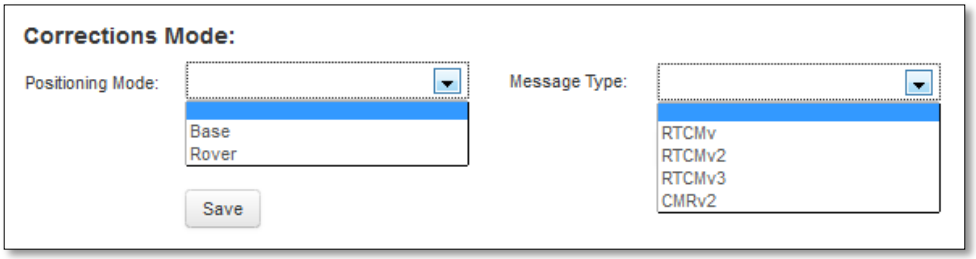

Figure 16: Positioning Mode and Message Type Options

6.3.1.1 Base Position. The user can enter Base coordinates or select Auto. Selecting Auto will use an average position.

6.3.2 GNSS Web Interface.

The user may connect to the GNSS via IP address (default is 192.168.2.80) to access a more detailed GNSS configurations.

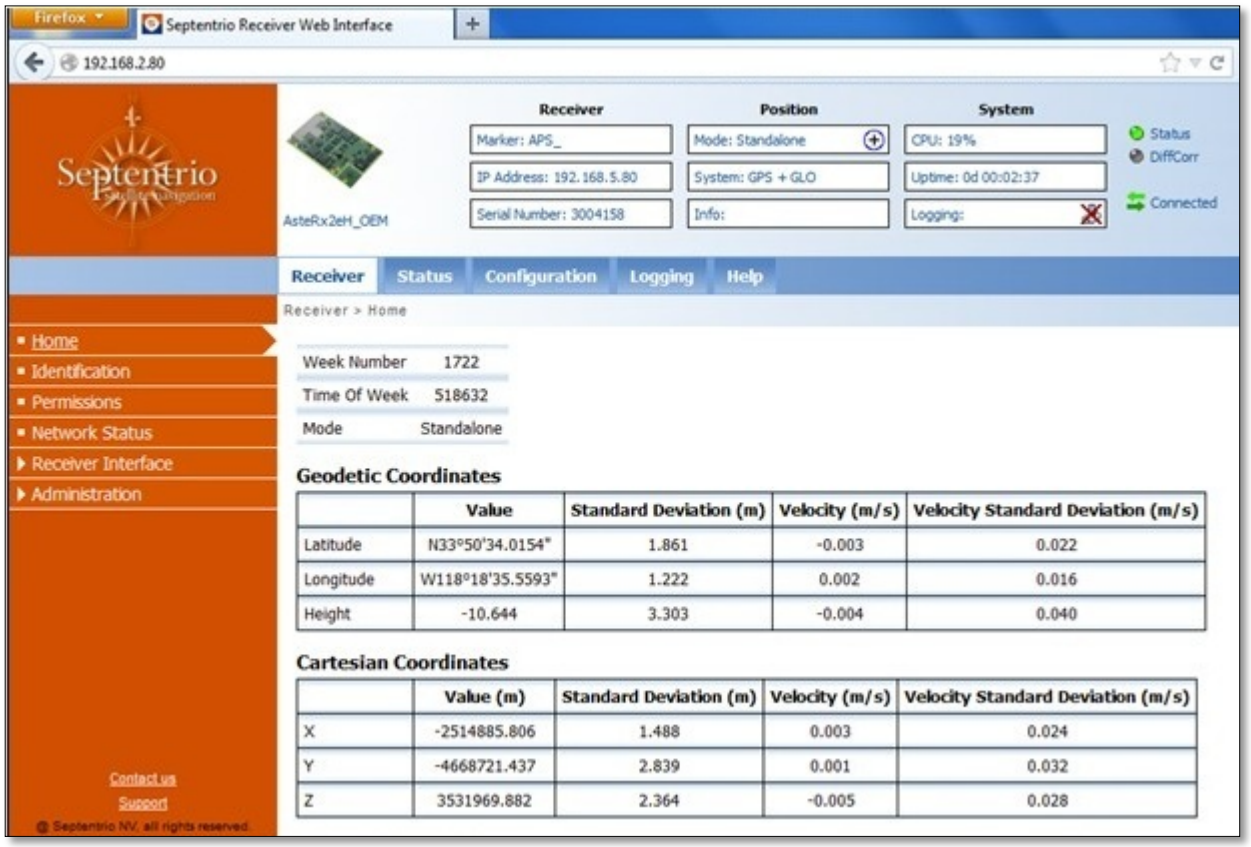

Figure 17: GNSS Web Interface Screen

6.4 L-Band Demodulator (LBR)

Click on 'LBR' to open the L-Band Demodulator Configuration screen.

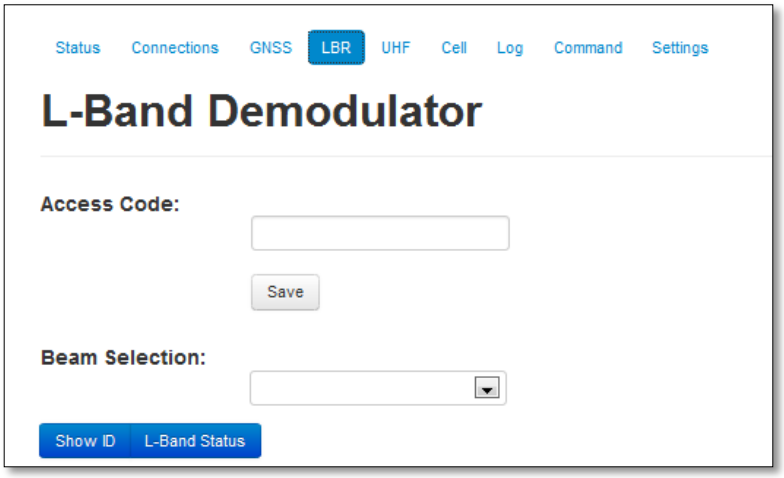

Figure 18: LBand Demodulator Main Screen

6.4.1 Access Code.

6.4.2 Beam Selection. The user can select the appropriate Immarsat satellite.

6.4.3 Show ID. This will show the LBR ID of the APS-U.

Figure 19: LBR ID

6.4.4 L-Band Status. This shows the current status of the LBR.

6.5 UHF

Click on 'UHF' to open the UHF Radio Configuration screen. The 1watt internal radio of the APS-U can be configured from this screen. Common Selections can be made here and applied by clicking on the 'Apply' button.

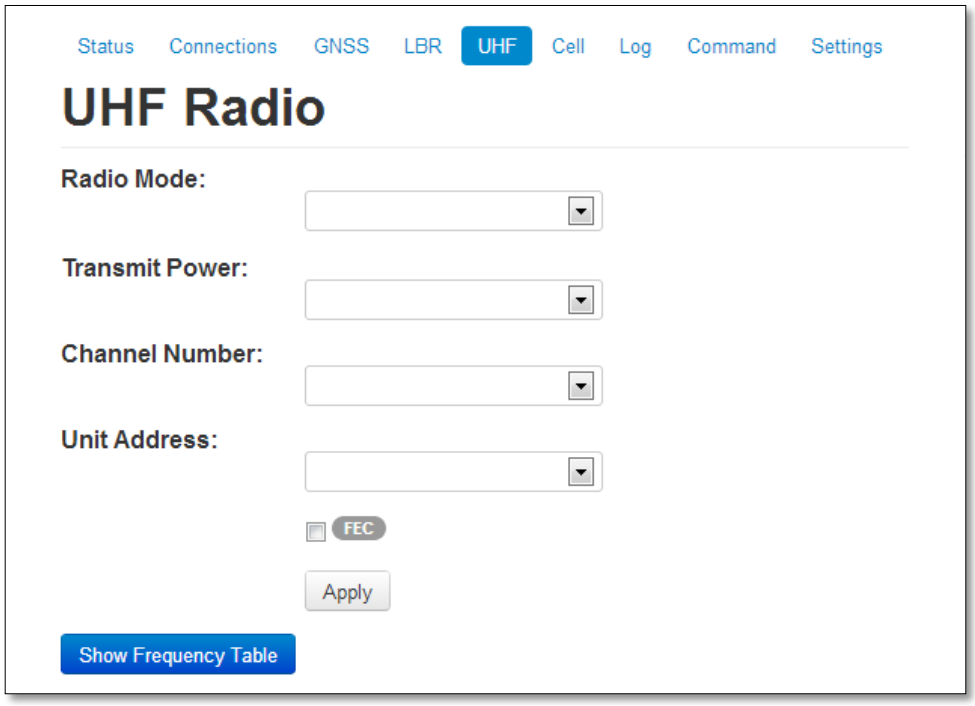

Figure 20: UHF Radio Main Screen

6.5.1 Radio mode.

The user may set the radio to Receive, Transmit, or Repeat.

Figure 21: UHF Radio Mode Selections

6.5.2 Transmit Power.

The user may set the appropriate Radio Transmit power (100mW - 1W).

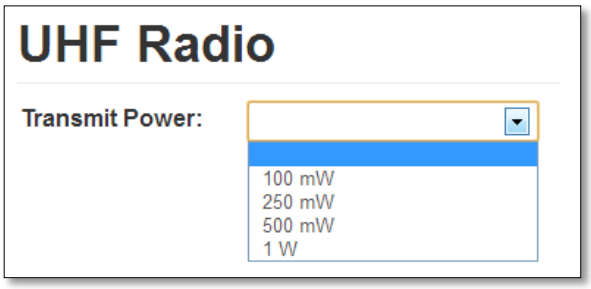

Figure 22: UHF Radio Transmit Power Selections

6.5.3 Channel Number.

The user may set desired the Channel/Frequency.

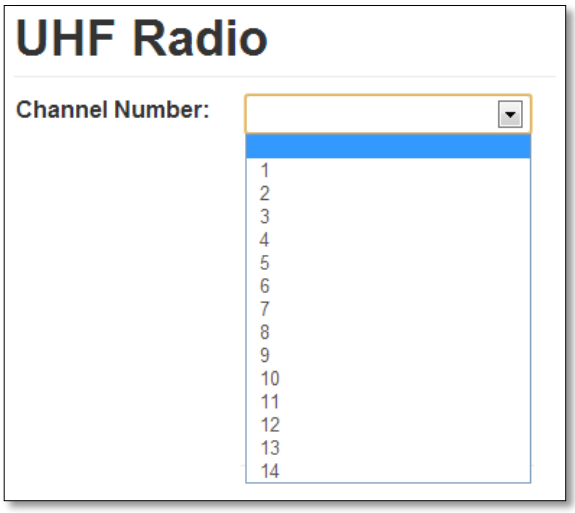

Figure 23: UHF Radio Channel Number Selections

6.5.4 Unit Address.

The user may set the Unit Address of the radio. It is important to note that each radio must have a unique unit address. For two APS-U's (Base and Rover) to communicate properly, each radio needs to have unique and separate unit addresses.

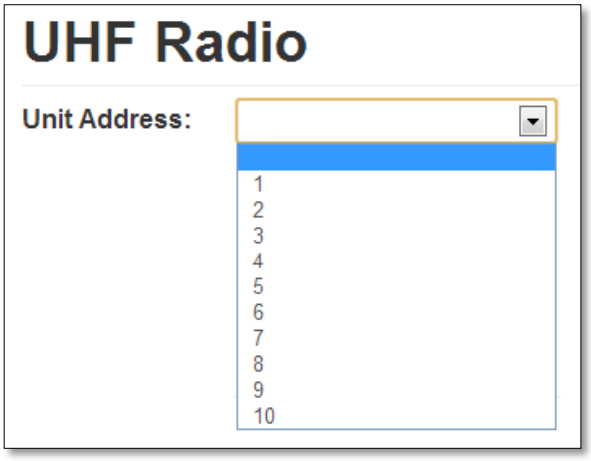

Figure 24: UHF Radio Unit Address Selections

6.5.5 Frequency Table.

The user may view the UHF radio's current frequency table. Simply click the 'Show Frequency Table' button.

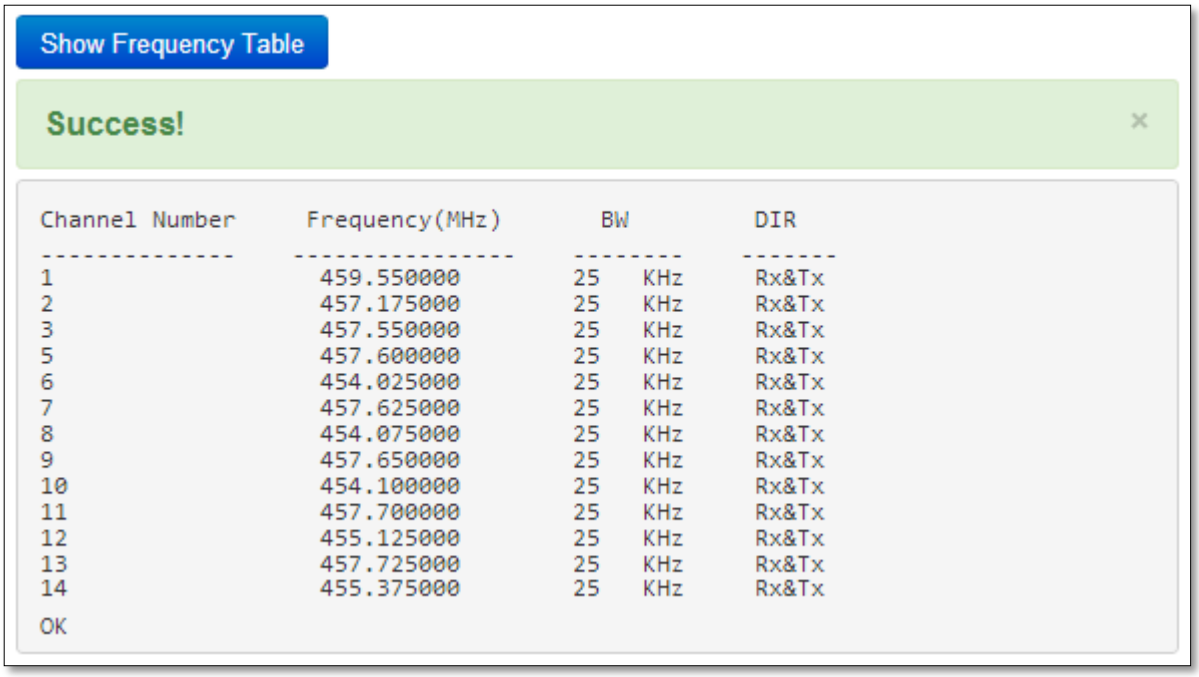

Figure 25: Frequency Table

6.6 Cellular Modem

Click on ‘Cell’ to open the Cellular Modem screen. The internal GSM Modem of the APS-U can be configured from this screen.

6.6.1 Connecting to an NTRIP or TCP/IP Server.

Ensure a valid SIM card is inserted into the APS-U. The SIM card slot is located behind the UHF door.

Fill in the appropriate information and click the ‘Connect’ button.

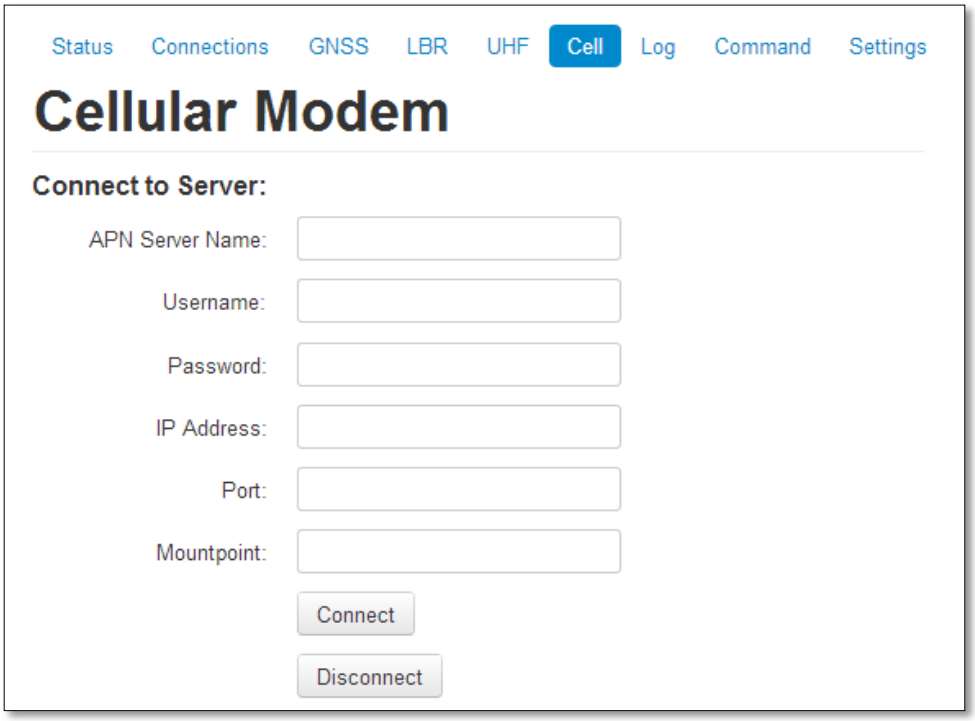

Figure 26: Cellular Modem Server Parameters

6.7 SD Card Logging (LOG)

Click on ‘Log’ to open the SD Card Logging screen. The 2GB internal SD card of the APS-U can be configured from this screen.

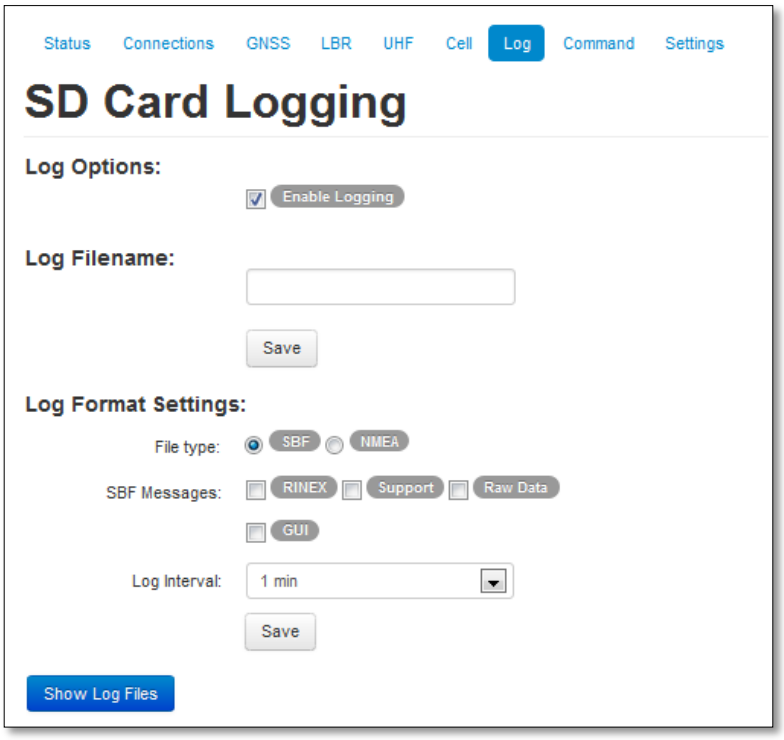

Figure 27: Internal SD Card Logging Main Screen

6.7.1 Log Options. Checking this box enables logging. Once logging is initiated, unchecking this box will stop logging.

6.7.2 Log Filename. This allows for the naming of a log file.

6.7.3 Log Format Settings. The user can select either SBF (Septentrio Binary Format) or NMEA (National Marine Electronics Association) data logging types.

6.5.3.1. SBF (Septentrio Binary Format). This selection allows for RINEX (Receiver Independent Exchange Format), Support, Raw Data, and GUI (Graphical User Interface) data to be logged.

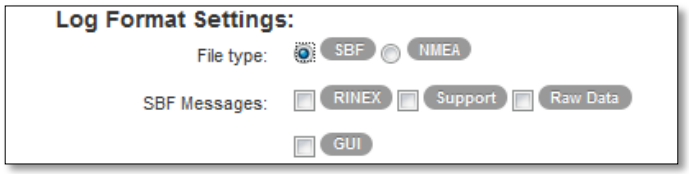

Figure 28: SBF Data Logging Options

- RINEX. This is for use in Post-Processing applications.

- Support. This initiates MeasEpoch, MeasExtra, EndofMeas, GPSRawCA, GPSRawL2C, GPSRawL5, GLORawCA, GALRawFNAV, GALRawINAV, GEPRawL1, QZSRawL1CA, QZSRawL2C, QZSRawL5, GPSNav, GPSAlm, GPSIon, GPSUtc, GLONav, GLOAlm, GLOTime, GALNav, GALAlm, GALIon, GALUtc, GALGstGps, GEONav, GEOAlm, PVTGeodetic,

BaseVectorGeod, AttEuler, DOP, PVTSupport, EndOfPVT, ExtEvent, DiffCorrIn, BaseStation, ChannelStatus, ReceiveStatus, InputLink, OutputLink, ReceiverSetup, and Command SBF data strings. For more information, please see the Septentrio Command Line Interface Reference Guide.

• Raw Data. This initiates MeasEpoch, MeasExtra, GPSRawCA, GPSRawL2C, GPSRawL5, GLORawCA, GALRawFNAV, GALRawINAV, GEORawL1, QZSRawL1CA, QZSRawL2C, QZSRawL5, GPSNav, GLONav, GALNav, GEONav, PVTGeodetic, DiffCorrIn, ReceiverSetup, Commands, and Comment data strings. For more information, please see the Septentrio Command Line Interface Reference Guide.

• GUI. This initiates MeasEpoch, EndOfMeas, EndOfPVT, SatVisibility, ChannelStatus, Commands, PVTGeodetic, PosCovGeodetic, VelCovGeodetic, DOP, PVTSatCartesian, PVTResiduals, RAIMStatistics, BaseLine, AttEuler, ReceiverTime, ReceiverStatus, InputLink, OutputLink, ReceiverSetup, and Comment data strings. For more information, please see the Septentrio Command Line Interface Reference Guide.

6.5.3.2. NMEA (National Marine Electronics Association) Logging. This allows for NMEA data strings to be selected.

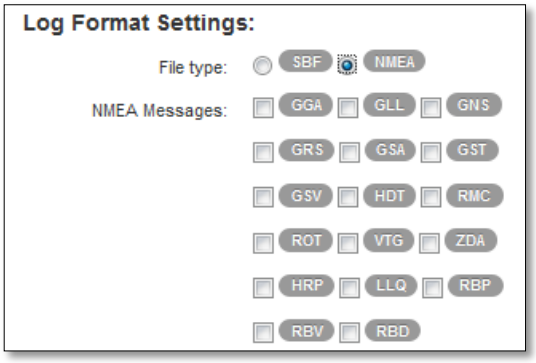

Figure 29: NMEA Data Logging Options

6.7.4 Log Interval. This allows the user to specify a logging interval.

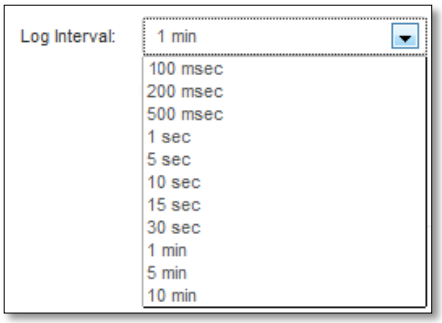

Figure 30: SD Card Logging Interval Options

6.7.5 Show Log Files. This will show the current log files on the SD card.

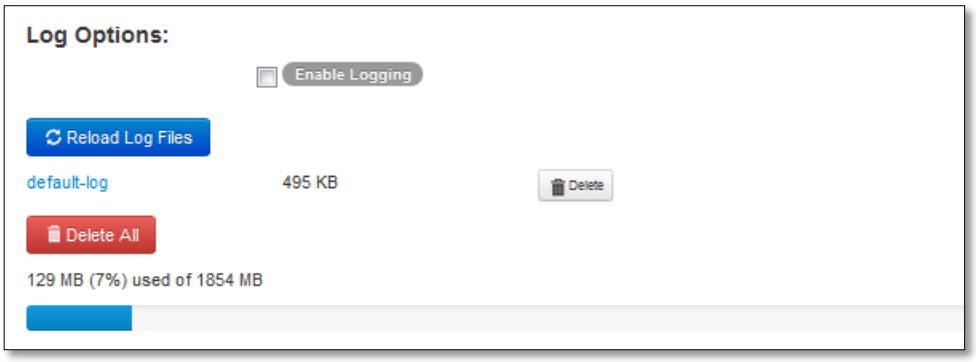

Figure 31: Log Files on SD Card

6.7.6 Downloading Internal SD Card Files. Simply click on the file (default-log in this example) and the Web Browser will begin downloading the file to a specified location.

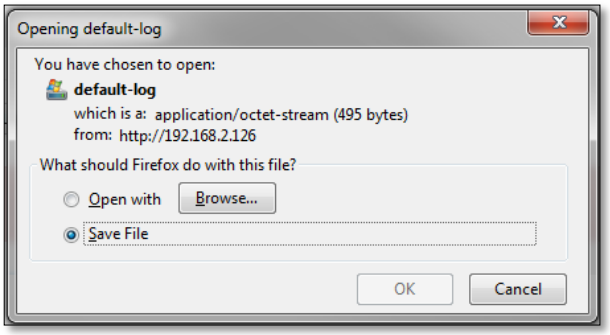

Figure 32: Downloading Internal SD Files

6.8 Command Line

Click on 'Command' to open the Command Line screen. Here, the user can send a specific command to a selected internal device with a time delay and a terminator.

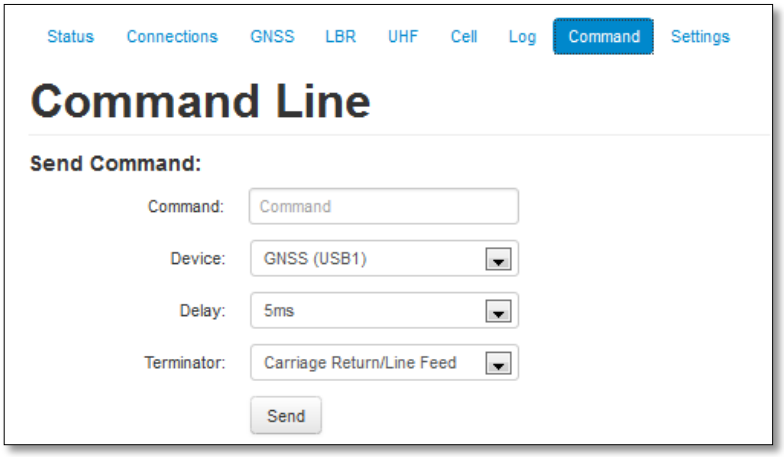

Figure 33: Command Line Screen

For example, the command 'GetElevationMask' sent to GNSS (COM4) with a 5ms delay and Carrage Return/Line Feed was sent. The response is shown below.

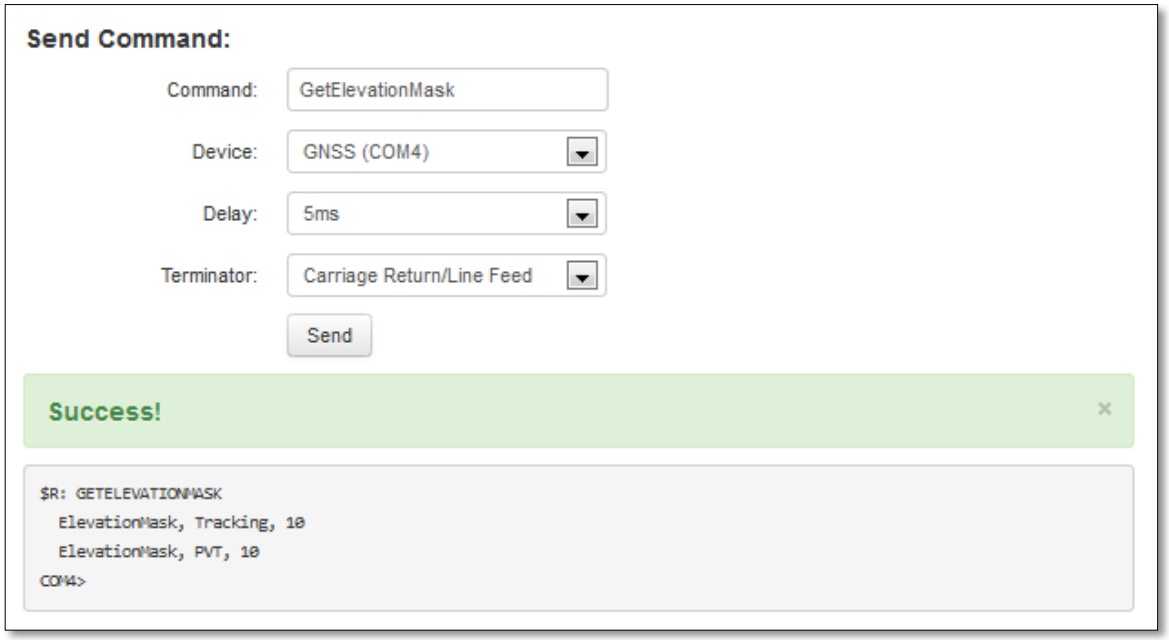

Figure 34: GetElevationMask Command and Response Example

6.9 Settings

Click on 'Settings' to open the Software Update and APS-U IP Settings. Here, the user can perform Software updates and adjust the IP Settings of the APS-U.

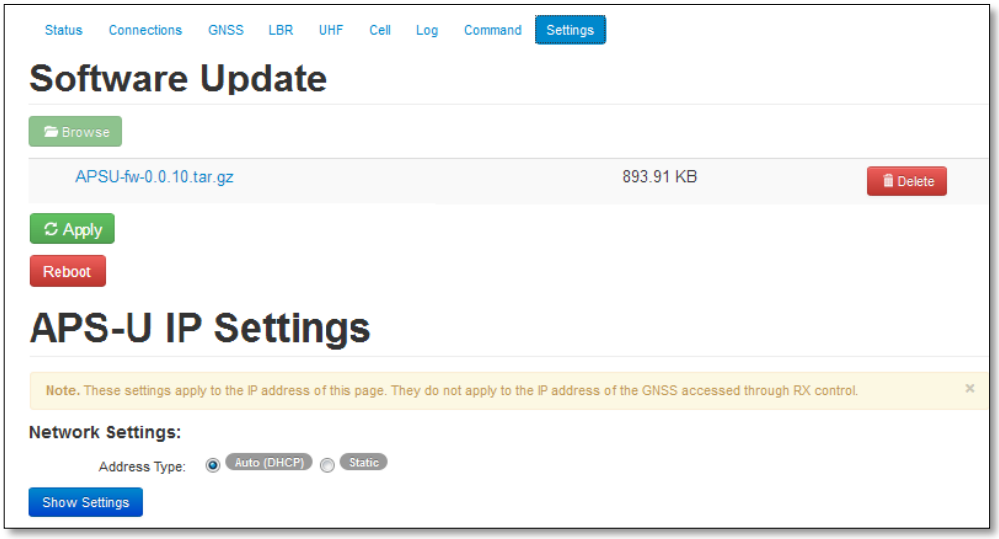

Figure 35: Settings Main Screen

6.9.1 Software Update. See Section 7.3.

6.9.2 APS-U IP Settings. The user may see or adjust the current IP settings of the APS-U.

6.9.3 Change IP Settings. Click on 'Static' to display the Network address, Gateway Address, IP Address, and Netmask. Fill in desired addresses and click Save.

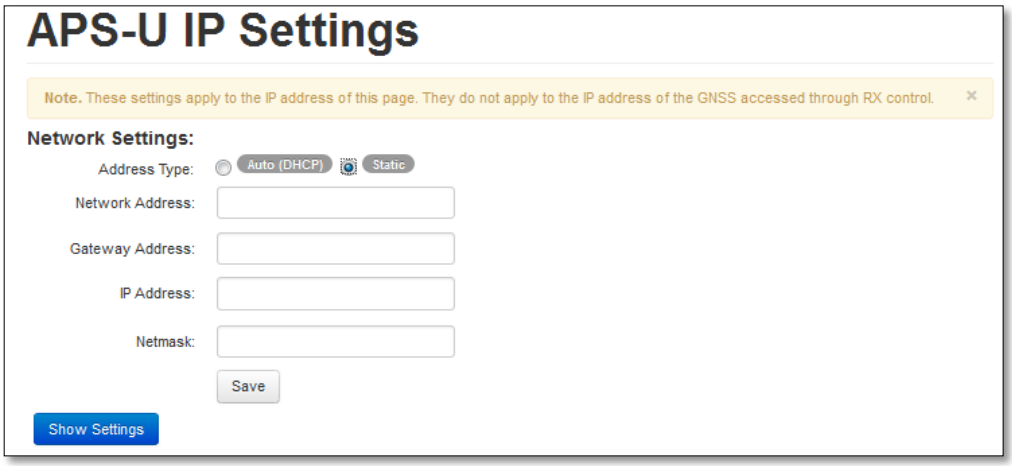

Figure 36: APS-U IP Settings

7 Firmware Upgrades.

Firmware upgrades may be done to the OEM modules. In particular, the GNSS, LBR, and Processor are key modules that may have firmware upgrades during the normal lifetime of use.

7.1 GNSS Firmware Upgrade

This process will be performed using a PC and the RxTools suite of programs provided in the CD included with the APS-U.

7.1.1 Save the GNSS Firmware package to the PC.

7.1.2 Connect to COM3 using the 10121 cable for direct access to the GNSS Receiver.

7.1.3 Using RxControl, open the appropriate Com Port on the PC.

7.1.4 Follow the steps for firmware upgrade under menu File->Upgrade.

7.1.5 After the upgrade finishes, power cycle the system.

7.2 LBR Firmware Upgrade

This upgrade process will be performed using a PC and Veripos' software 'L-Band Control 2.'

7.2.1 Install 'L-Band Control 2' to the PC.

7.2.2 Save the LBR Firmware package to the PC.

7.2.3 Browse to the location of 'L-Band Control 2' on the PC.

7.2.4 Right-click on the Config.xml file to edit the preferred COM Port. Save when finished using the same Config.xml filename

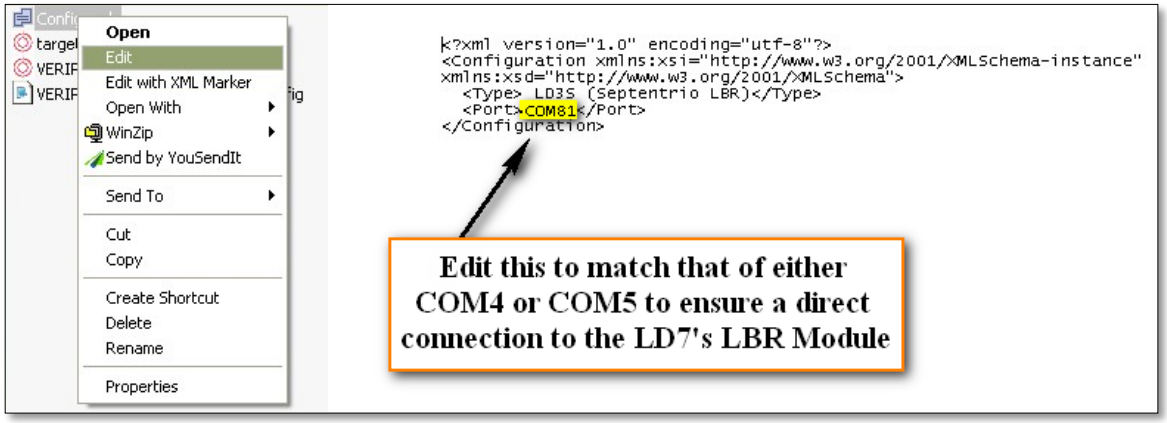

Figure 37: 'Config.xml' Com Port Editing

7.2.5 Click on the Veripos L-Band Control Icon.

Figure 38: L-Band Control 2 Icon

7.2.6 The program will connect to the LBR. Click on the 'OK' button to continue.

Figure 39: L-Band Control 2 Main Screen

7.2.7 In the Main Menu, select 'Upload Firmware.'

Figure 40: L-Band Control 2 Main Menu

7.2.8 Browse to the Firmware location, click ‘OK’ to continue.

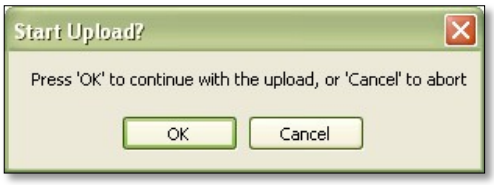

Figure 41: LBR Update Initiation

--The program will perform the firmware update.

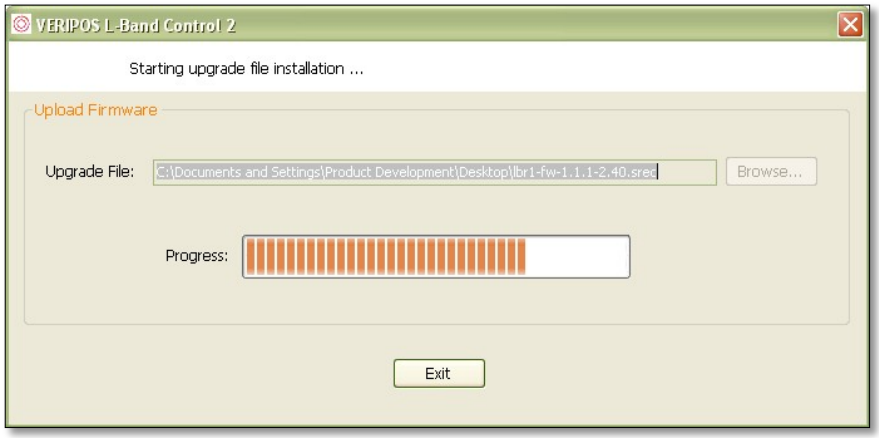

Figure 42: Update in Progress

7.2.9 Once the update is finished, click on ‘Close.’

Figure 43: Close L-Band Control 2

7.3 Processor Firmware Update

This process will be performed using the Web Interface on a PC.

7.3.1 Save the Process Firmware package to the PC.

7.3.2 Click on ‘Settings’ to open the Software Update Menu.

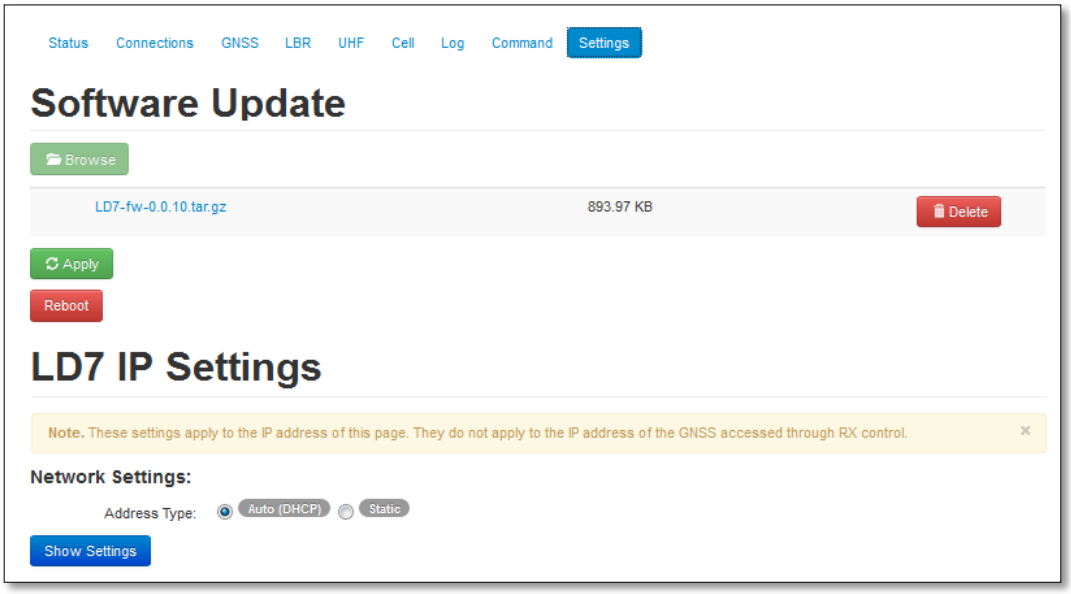

Figure 44: Settings Main Screen

7.3.3 Click on Browse and navigate to the Processor Firmware.

7.3.4 Once the file is uploaded, click on the ‘Apply’ to install the firmware.

7.3.5 The firmware upgrade process will run. Once completed, refresh the Web Browser page.

8 Heading Output

With two GNSS antennas, the APS-U can output GNSS heading information. This information is derived from a NMEA output from the internal GNSS receiver. The APS-U can be configured to output heading information on COM1, COM2, COM3, USB, or BT.

8.1 Heading information output via COM1, COM2, USB, or Bluetooth

8.1.1 Connect to the APS-U through COM1, COM2, USB, or Bluetooth using any terminal program.

8.1.2 At the 'APS-U>' prompt, send command: connect,gnss

8.1.3 At the 'USB1>' prompt, send command: SetNMEAOutput, Stream5, USB1, HRP, <output rate>

For example, the command for a 1 second output would be **SetNMEAOutput, Stream5, USB1, HRP, Sec1**

8.1.4 Heading information will now be flowing from the selected port of the APS-U.

8.1.5 To stop the output of heading information, send command: SetNMEAOutput, Stream5, USB1, HRP, off

8.1.6 To disconnect from the selected COM1, COM2, USB, or Bluetooth port, send command: >>>>>>>>>>

8.2 Heading information output via COM3

COM3 is a direct connection to the GNSS receiver of the APS-U.

8.2.1 Connect to COM3 of the APS-U using the 10121 cable using any terminal program.

8.2.2 At the 'COM3>' prompt, send command: SetNMEAOutput, Stream5, USB1, HRP, <output rate>

For example, the command for a 5 second output would be SetNMEAOutput, Stream5, USB1, HRP, Sec5

8.2.3 Heading information will now be flowing from the COM3 port of the APS-U.

8.2.4 To stop the output of heading information, send command: SetNMEAOutput, Stream5, USB1, HRP, off

9 Frequently Asked Questions

9.1. Question: How do I configure a unit back to the ALTUS factory defaults?

Answer: *Do a hard reset on the GNSS receiver on COM3 of the device. Send the command: 'ERST, Hard, all' using any terminal program. Then, hold the power button down for 4 seconds to reboot the device.*

9.2. Question: Why am I not receiving GLONASS corrections?

Answer: *You must first verify that the base station transmits GLONASS corrections. The GNSS firmware first utilizes GPS satellites to get to RTK Fixed status. Then if more than 2 acceptable GLONASS satellites are available, RTK Fixed GPS+GLO RTK status is achieved.*

9.3. Question: How do I know which message type to select RTCM V2.3, RTCM V3.0, CMR, or CMR+?

Answer: *Base stations transmit different messages types. It is important to confirm what message type(s) the base is transmitting so the Rover can be set accordingly.*

9.4. Question: My receiver will not respond to commands, why not?

Answer: *A setting in the APS-U may have been incorrectly set causing a disruption in communication. Power the unit off, remove all power sources, and turn the unit back on. After the unit boots, perform a hard reset and upload the default script.*

9.5. Question: How do I contact ALTUS Positioning Systems?

Answer:

Email:	support@altus-ps.com
Website:	www.altus-ps.com/support
Mail:	ALTUS Positioning Systems 20725 Western Avenue, Suite 100 Torrance, CA 90501 (310) 541-8139 office (310) 541-8257 fax

9.6. Question: I cannot get the UHF radio to operate how I want using the Web Interface, what can I do?

Answer: *When the system is powered on:*

1. *Select the GNSS Data -> Cell button*
2. *Select the GNSS Data -> UHF button*
3. *Make the appropriate settings in the UHF screen and select Apply*

10 List of Typical GNSS Related Acronyms

APME	A Posteriori Multipath Estimation
ARP	Antenna Reference Point
ASCII	American Standard Code for Information Interchange
CMR	Compact Measurement Record
CPU	Central Processing Unit
CR	Carriage Return
CTS	Clear to Send
DGPS	Differential Global Positioning System
DOP	Dilution of Precision
EGNOS	European Geostationary Navigation Overlay System
ESTB	EGNOS System Test Bed
FPGA	Field Programmable Gate Array
GLONASS	Global Orbiting Navigation Satellite System (Russian alternative for GPS)
GNSS	Global Navigation Satellite System
GPRS	General Packet Radio Service
GPS	Global Position System
GPX	GPS exchange
GSM	Global System for Mobile communications
GUI	Graphical User Interface
HERL	Horizontal External Reliability Level
HPL	Horizontal Protection Level
IGS	International GNSS Service
LAMBDA	Least-squares AMBiguity Decorrelation Adjustment
LED	Light Emitting Diode
MDB	Minimal Detectable Bias
MOPS	Minimum Operational Performance Standards
MSAS	Multi-functional Satellite Augmentation System
MT	Message Type
NGS	National Geodetic Survey
NMEA	National Marine Electronics Association
OEM	Original Equipment Manufacturer
OTF	On the Fly
PPS	Pulse Per Second
PVT	Position Velocity Time
RAIM	Receiver Autonomous Integrity Monitoring
RINEX	Receiver Independent Exchange Format
ROM	Read Only Memory
RTCA	Radio Technical Commission for Aeronautics
RTCM	Radio Technical Commission for Maritime Services
RTK	Real Time Kinematic
SBAS	Satellite Based Augmentation System
SD	Secure Digital
SDHC	Secure Digital High Capacity
SIM	Subscriber Identity Module

UHF	Ultra high frequency
VRS	Virtual Reference Station
WAAS	Wide Area Augmentation System